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September 1, 2004

Mr. William J. Taylor
U.S. Department of Energy, Fernald Area Office
P.O. Box 538705
Cincinnati, OH 45253-8705

RE: COMMENTS ON GROUNDWATER REMEDY EVALUATION PLAN

Dear Mr. Taylor:

This letter provides Ohio Environmental Protection Agency comments on the Groundwater Remedy Evaluation and Field Verification Plan.

Should you have any questions, please contact Tom Ontko or me.

Sincerely,

Tom Ontko

for Thomas A. Schneider
Fernald Project Manager
Office of Federal Facilities Oversight

cc: Jim Saric, U.S. EPA
Mark Shupe, GeoTrans, Inc.
Michelle Cullerton, Tetra Tech EM Inc.
Ruth Vandergrift, ODH

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Ohio Environmental Protection Agency Comments on the Groundwater Remedy Evaluation and Field Verification Plan

1) Commenting Organization: Ohio EPA Commentor: GeoTrans, Inc.
Section #: 1.1 Pg.#: 2 Line #: 15 Code: C
Comment: The text states that the modeling presented in the Comprehensive Groundwater Strategy Report indicates that continuing well-based re-injection will only shorten the aquifer remedy by four years. This statement requires extensive qualification. The cited modeling effort is based on a simplistic representation aquifer heterogeneity, assumes a linear distribution coefficient, and ignores the sorbed total uranium mass present in the portion of the aquifer dewatered as a result of the remediation. Recognition of these limitations requires that the predicted cleanup time be characterized as overly optimistic. A more realistic treatment of these, and perhaps other issues in the model, would show a greater value of well-based reinjection for reducing cleanup time.

2) Commenting Organization: Ohio EPA Commentor: GeoTrans, Inc.
Section #: 2.0 Pg.#: 4 Line #: 26 Code: C
Comment: An explanation of how the "nominal" boundary conditions were derived is needed. Alternatively, a document citation should be provided.

3) Commenting Organization: Ohio EPA Commentor: GeoTrans, Inc.
Section #: 2.2.1 Pg.#: 6 Line #: 14 Code: C
Comment: Direct push data at the site predates the startup of remediation pumpage in many portions of the site. Mixing this data with recently measured concentrations will result in a more inaccurate estimation of initial conditions than might be obtained by considering more up-to-date direct push information only.

4) Commenting Organization: Ohio EPA Commentor: GeoTrans, Inc.
Section #: 2.3 Pg.#: 7 Line #: 9 Code: C
Comment: It is unclear how the model substantiates or refutes the claim that the Operable Unit 5 Record of Decision pumping rates can be met or exceeded by "Approach C." Please explain and provide justification for this statement.

5) Commenting Organization: Ohio EPA Commentor: GeoTrans, Inc.
Section #: 2.3 Pg.#: 7 Line #: 17 Code: C
Comment: The recognition and apparent acceptance that a stagnation zone will develop once reinjection is stopped is disconcerting given that a major overhaul of the remediation system is being contemplated here. More specific actions should be proposed at this time to address it. A more proactive approach than the proposed managed natural attenuation-type passive monitoring strategy is recommended.

6) Commenting Organization: Ohio EPA Commentor: GeoTrans, Inc.
Section #: 3.0 Pg.#: 9 Line #: 2 Code: C

Comment: DOE's stated objective for evaluating induced recharge through the SSOD is to determine whether or not the SSOD can provide recharge to the aquifer at a maximum rate of *up to 500 gpm*. Considering that the current design reinjection rate for the system as a whole is 1400 gpm, the selection of 500 gpm as the maximum target rate for the SSOD is too low and has not been justified. DOE should define the objective of this evaluation to be the determination of the *maximum* rate of induced recharge that can be achieved by reinjection through the SSOD. At a minimum, DOE needs to indicate a technical basis for limiting the maximum reinjection rate considered to 500 gpm.

7) Commenting Organization: Ohio EPA Commentor: GeoTrans, Inc.
Section #: 3.0 Pg.#: 9 Line #: 3 Code: C
Comment: Provide an explanation why treated groundwater, available at much greater quantity from the CAWWT, was not considered as the most likely source for reinjection water to the SSOD.

8) Commenting Organization: Ohio EPA Commentor: GeoTrans, Inc.
Section #: 3.0 Pg.#: 9 Line #: 3 Code: C
Comment: Pumping uncontaminated groundwater from the construction wells and reinjecting that water into a contaminated portion of the aquifer raises the question of whether or not this is an defensible use of the resource. Use of treated site groundwater for reinjection purposes avoids this issue. Contaminating otherwise useable groundwater may become a negative public perception issue, particularly during drought periods.

9) Commenting Organization: Ohio EPA Commentor: GeoTrans, Inc.
Section #: 3.2.2 Pg #: 10 Line #: 22 Code: C
Comment: Water will be ponded in the SSOD from the position of the weir shown on Figure 3.1 to some point upstream. Figure 3.2.1 shows the model blocks where recharge from the SSOD was applied in the model. Based on site topography in the vicinity of the SSOD, the locations of these blocks do not correspond to the location of the portion of the stream where water will pond and recharge to the aquifer will occur. Please explain this discrepancy. The model conclusions should be revalidated if the SSOD-induced recharge was misapplied.

10) Commenting Organization: Ohio EPA Commentor: GeoTrans, Inc.
Section #: 3.3 Pg #: 11 Line #: 7 Code: C
Comment: It is not clear how the model substantiates or refutes the claim that the Operable Unit 5 Record of Decision established discharge limits would not be met with the pumping rates defined for "Approach C-Improved." Please explain and provide justification for this statement.

11) Commenting Organization: Ohio EPA Commentor: GeoTrans, Inc.
Section #: 3.3 Pg #: 11 Line #: 15 Code: C

Comment: Clarify what is meant by stating that "Approach C-Improved" only provides for 800 gpm groundwater treatment.

12) Commenting Organization: Ohio EPA Commentor: GeoTrans, Inc.
Section #: 3.3 Pg #: 11 Line #: 20 Code: C
Comment: The text notes that it is unknown if the SSOD is capable of delivering 500 gpm recharge to the aquifer. The model is an obvious tool to use for estimating SSOD aquifer recharge capability. The SSOD should be re-defined in the model as a head dependent flux boundary and the maximum potential reinjection rate should be estimated given realistic assumptions regarding the hydraulic conductivity of SSOD bottom sediments. As an example, a three-dimensional flow model of the site was used to calculate an informal estimate of the reinjection rate that the SSOD might be able to sustain. The analysis simulated two weirs on the SSOD, one located at the culvert that runs beneath the road just south of the former Active Flyash Pile Area (the position shown on figure 3.1) and the other located approximately 700 feet upstream from that point. If a sufficient re-injection flow is made available to allow water to pool behind both weirs, the resulting pool elevations would be approximately 545 and 550 feet, respectively. Assuming an SSOD bottom material hydraulic conductivity of 3.8 feet/day, a recharge rate of 1800 gpm was calculated. Although only a preliminary estimate based on limited site information, this analysis suggests that it can be anticipated that the SSOD may accept greater than 500 gpm flow rates.

13) Commenting Organization: Ohio EPA Commentor: GeoTrans, Inc.
Section #: 5 Pg #: 15 Line #: 13 Code: C
Comment: A water level transducer and data logger should also be installed in Monitoring Well 23279 located near re-injection well 33263. Data provided by this transducer will show how much the water level falls in the vicinity of this re-injection well after pumping has stopped and verify that water level stability has been attained in the northwestern portion of the South Field.

14) Commenting Organization: Ohio EPA Commentor: GeoTrans, Inc.
Section #: 5 Pg #: 15 Line #: 27 Code: C
Comment: Consideration should be given to including in the capture and flow interpretations a *quantitative* analysis of flow direction and gradient (e.g., based on well triads).

15) Commenting Organization: Ohio EPA Commentor: GeoTrans, Inc.
Section #: 5 Pg #: 16 Line #: 24 Code: C
Comment: DOE has developed an extensive sediment characterization plan for the SSOD (PSP for Predesign Characterization of Sediments in Paddys Run and Associated Drainage Features, March 15, 2004). As a result of the sampling discussed in that document, a sediment excavation design for at least portions of the SSOD will likely be developed. The excavation of extensive sediment volumes from the ditch will likely result

in an increase in bottom sediment hydraulic conductivity in the affected areas. In order to enhance the infiltration capabilities of the SSOD, the excavation of bottom sediments along its entire length should certainly be considered. At a minimum, the field trial discussed in this plan should be delayed until all SSOD remediation activities have been completed.

16) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 5.0 Pg #: 16 Line #: last line Code: c
Comment: The text states that the west fork of the SSOD contains sediment contamination and will not receive discharge or be a part of this test.
This is unacceptable. A plan to effect the remediation of the west fork should be submitted for approval. The remediation of this area should precede the implementation of the assessment of induced recharge.

17) Commenting Organization: Ohio EPA Commentor: GeoTrans, Inc.
Section #: 5 Pg #: 16 Line #: 29 Code: C
Comment: In addition to the contamination noted in the northwestern fork, the background section of the PSP for Predesign Characterization of Sediments in Paddys Run and Associated Drainage Features (March 15, 2004) notes that contaminated runoff also enters the northeastern fork of the SSOD. The PSP calls for sediment samples to be collected along the northeastern fork. The field trial should be delayed until the results from these samples have been reviewed.

18) Commenting Organization: Ohio EPA Commentor: GeoTrans, Inc.
Section #: 5 Pg #: 16 Line #: 29 Code: C
Comment: The test setup should have the capability to accommodate an increased flow rate to the SSOD from an additional clean water source in the event that field results indicate that the SSOD will reinject at a greater-than-500 gpm flow rate.

19) Commenting Organization: Ohio EPA Commentor: GeoTrans, Inc.
Section #: 5 Pg #: 17 Line #: 2 Code: C
Comment: The flow meter selected for the field trial should be capable of gaging flows at least double or triple the 500 gpm rate in event that the SSOD is capable of reinjecting at a greater flow rate.

20) Commenting Organization: Ohio EPA Commentor: GeoTrans, Inc.
Section #: 5 Pg #: 17 Line #: 3 Code: C
Comment: If possible, one or more additional weir(s) should be installed along the SSOD to maximize ponding. Water ponded to the greatest achievable depths along the length of the ditch will maximize the driving head for reinjection of water into the aquifer.